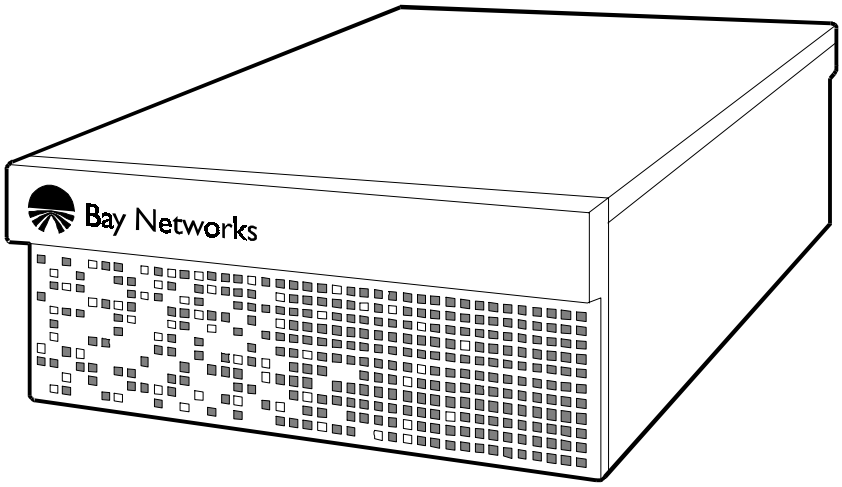
# Bay Networks

# Extranet Switch 2000

## Getting Started Guide



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# Contents

# Preface

This Getting Started Guide will step you through the necessary tasks to get your Switch up and running fast. This guide provides information on the following:

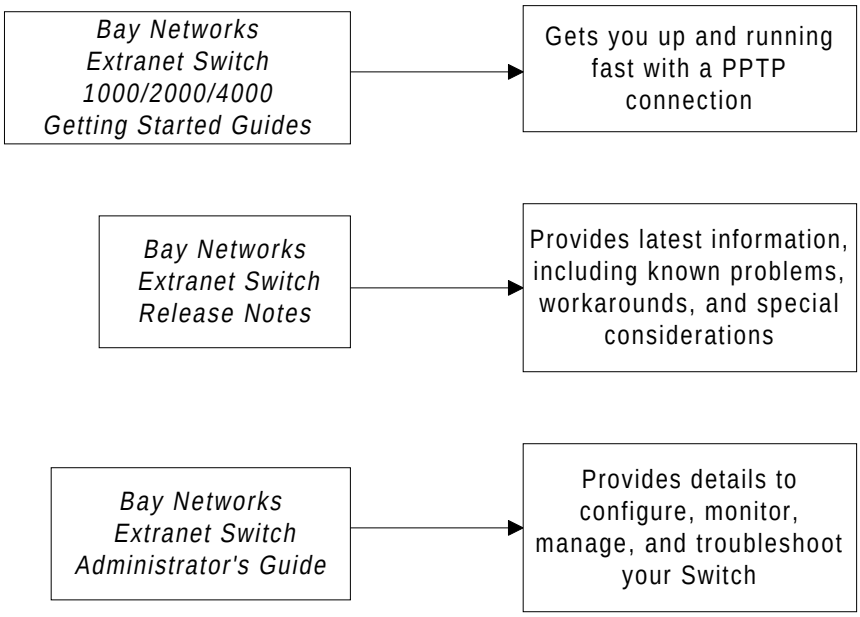
- Components
- Cabling, Lights, and LEDs
- Assigning a System Identity
- Accessing a Web Browser
- Managing the Switch
- Rack Mounting
- Changing Hardware Configurations

Complete details for configuring and monitoring the Switch are in the *Bay Networks Extranet Switch Administrator's Guide.*

After attaching the Switch's cables, you can run the Bay Networks IP Configuration utility on your PC to provide the Switch with IP configuration information. Then you can begin to manage the Switch and view active sessions. Instructions are also provided for installing the Switch into a chassis rack, and installing additional LAN or WAN cards.

# Extranet Switch Documentation Map

This map lists the associated documentation that you will need to configure and manage your Bay Networks Extranet Switch and represents the order that you would typically follow.



# Conventions

This guide refers to the Bay Networks Extranet Access Switch 2000 as the Switch. This document assumes that you are familiar with Web browsers and their general operation.

## Documentation

This document uses the following conventions to distinguish among notes of varying importance:

**NOTE:** *Take notice.* Notes contain helpful suggestions or references to materials contained in this document.

**TIP**: *Good idea*. A Tip is something that might be considered a good idea, whether for security reasons or because it will save you time or effort.

**IMPORTANT**: *Take particular notice.* Important references contain concepts or information that has bearing on other fields or situations (i.e., what you do here affects other fields or options elsewhere).

**CAUTION**: *Be careful*. In this situation, you might do something that could result in damage to the equipment or loss of data.

**WARNING**: *Danger*. You are in a situation that could cause bodily injury. Before working on equipment, beware of the hazards involved with electrical circuitry and standard practices for preventing accidents, such as disconnecting equipment from its power source.

## User Interface

### Help Button

Click the Help button that is located in the upper right of displays to learn about fields on a given page. Where appropriate, the information provides cause and effect of an action; otherwise, it might offer troubleshooting steps.

# Bay Networks Customer Service

Contact the appropriate Technical Solutions Center below to get help on your Switch.

| Technical Solutions Center | Telephone Number | Fax Number |
|---|---|---|
| United States and Canada | 800-2LANWAN (800-252-6926); enter Express Routing Code (ERC): 176# | 978-916-3514 |
| Valbonne, France | 33-4-92-96-69-66 | 33-4-92-96-69-96 |
| Sydney, Australia | 61-2-9927-8800 | 61-2-9927-8899 |
| Tokyo, Japan | 81-3-5402-0180 | 81-3-5402-0173 |
| Latin America | 561-988-7661 | 561-988-7550 |

# Chapter 1

# Checking the Components

Before you begin cabling and configuring the Bay Networks Extranet Switch, examine the product packaging to be sure that you have all the necessary components.

## Front View

Following is a front view of the Switch.

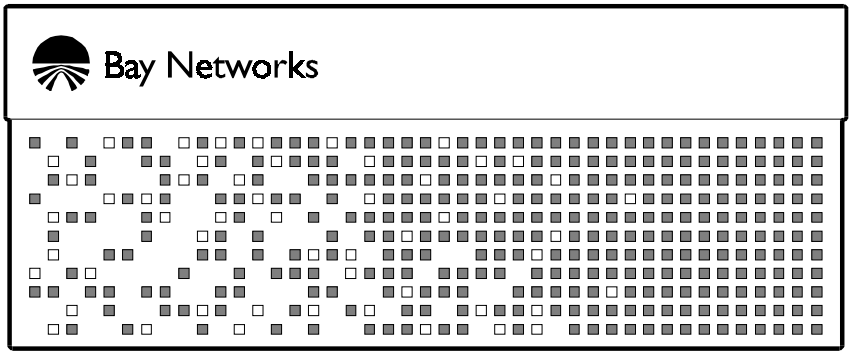



**Figure 1 – The Bay Networks Extranet Switch, Front View**

# Components List

The following table lists all of the components and accessories of the Bay Networks Extranet Switch 2000.

| Description | Quantity |
|---|---|
| Extranet Switch 2000 | 1 |
| Power Cord (US and Canada only) | 1 |
| Molded Serial Cable DB9/DB25-to-DB9/DB25 | 1 |
| Bay Networks Extranet Switch CD-ROM | 1 |
| Recovery Diskette | 1 |
| IP Address Configuration Utility Diskette | 1 |
| Administrator's Guide | 1 |
| Getting Started Guide | 1 |
| Extranet Switch Release Notes | 1 |
| Envelope with Product Literature | 1 |
| Mounting Brackets | 2 |
| Screws, #8-32 x 3/8 long, 100-degree flathead, Phillips, black | 8 |
| [1]Tinnerman rack mounting nuts #10-32 | 4 |
| [2]Screws #10-32 x 1/2 Truss PPH steel zinc | 4 |

**Notes**:
[1] Used only if the rack is not threaded.
[2] Used only with racks using 10-32 threading; some racks use 10-24.

## Optional Sliding Rail Bracket Set

| Description | Quantity |
|---|---|
| Slides | 2 |
| Slide Locking Brackets | 2 |
| Extender Brackets | 2 |
| Screws, #8-32 x 3/8 long, 100-degree flathead, Phillips, black | 4 |
| Screws, #8-32 x 3/8 long, PPH steel zinc | 14 |

If for any reason you have not received all of the materials listed above, contact Bay Networks Customer Service (refer to page iii).

# Chapter 2
# Cabling the Switch

This chapter describes how to connect the cables that you must use with the Switch, including pinouts for local area networks (LAN) connections, and how to read the LEDs when the Switch is powered on.

## LAN Speed Selection

The Switch automatically determines the speed of the LAN connection during power-up. To change the speed simply power down the Switch, connect to the desired LAN, and power the unit back up.

## LAN Interface

**100BASE-TX** connections require Category 5, twisted-pair wire. The 100BASE-TX specification supports 100Mbps transmission over two pairs of Category 5 twisted-pair Ethernet wiring; one pair each for transmit and receive operations.

100 meters is the maximum recommended cable segment length between a 100BASE-TX repeater and a workstation (due to signal timing requirements). This wiring scheme complies with the EIA 568 wiring standard.

**10BASE-T** connections can use Category 3, 4, or 5 twisted-pair wiring.

### Connector Pinouts

The LAN connectors on the Switch are RJ-45 straight-through. The following illustration shows the Switch connector's 10/100BASE-TX pinouts.

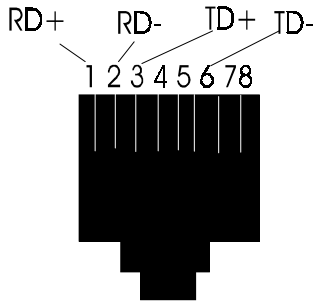



**Figure 2 – 10/100BASE-TX Pinouts**

## Optional WAN Interface

The WAN connectors are located on a PCI card that is installed in the switch. Two DB26S connectors provide the signals needed to interface to V.35 equipment. Included in the accessory box are two cables that map the DB26S signals to a standard V.35 connector. The cable pin-outs are shown below.

| DB26 Pin | Signal | V.35 Pin |
|---|---|---|
| 1 | GND | A |
| 2 | TDA | P |
| 3 | RDA | R |
| 4 | RTS | C |
| 5 | CTS | D |
| 6 | DSR | E |
| 7 | GND | B |
| 8 | DCD | F |
| 9 | RCB | X |
| 11 | ETB | W |
| 12 | TCB | AA |
| 14 | TDB | S |
| 15 | TCA | Y |
| 16 | RDB | T |
| 17 | RCA | V |
| 20 | DTR | H |
| 24 | ETA | U |

**Figure 3 – DB26S-to-V.35 Cable Pinouts**

Note that you will need a DSU/CSU (digital service unit/channel service unit) between the WAN connection and the Switch.

## Serial Cable

The serial cable provided with the Switch is a DB9/DB25-to-DB9/DB25. This provides a cross-over (transmit-to-receive and receive-to-transmit). The DB9 connector goes into the Switch and the other DB9 or DB25 connector goes into your workstation or terminal. You should ignore the extra DB25 connection that is attached.

## Connecting the Cables

1. Connect the 10/100BASE-TX LAN RJ-45 connector to the Switch.
2. Connect the power cord to the back of the Switch and to the electrical outlet.
3. Additionally, if you have LAN or WAN cards in Slots 1 through 3, connect those cables (refer to Installing Optional Cards on page 44).

   **NOTE**: Slot 4 is not supported.

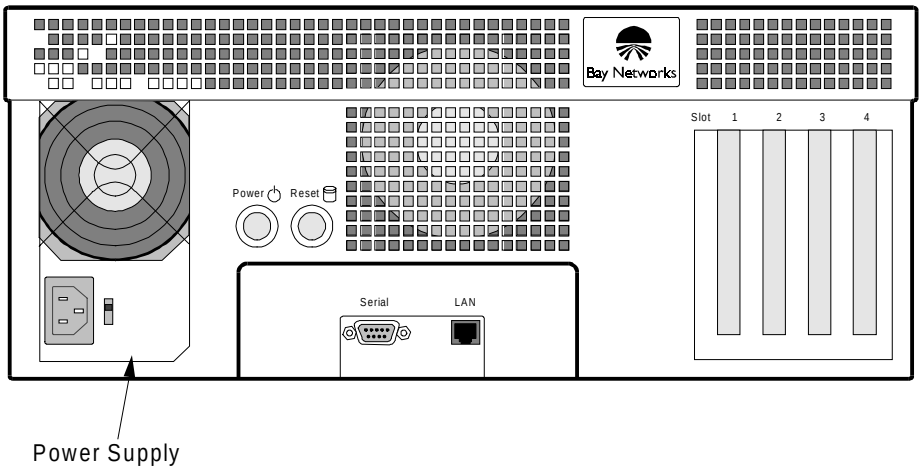



**Figure 4 – Extranet Switch Back View**

Bay Networks ships a serial cable with the Switch. You can provide the Switch with a Management IP Address, subnet mask, and default gateway address via the Serial Interface (refer to page 14 for details). Bay Networks, however, recommends that you use the IP Address Configuration Utility diskette for easy initial IP address configuration (refer to page 12).

# Understanding the Lights and LEDs

The Power light is green when the power is on; if it is flashing, there is a hardware failure and you should contact Bay Networks.

The Reset light is green, and when it flashes the Switch is either reading or writing to the disk. You can press the Reset button to restart the Switch, however, Bay Networks recommends that you restart the Switch from the System Shutdown display (refer to the Administrator's Guide for details).

Power on the Switch and confirm that the interfaces are cabled properly by examining the two LEDs located adjacent to the RJ-45 connector of the LAN port, or the LEDs located on the card panel.

Figure 5 shows the LAN Port LEDs and Figure 6 shows the PCI card 10/100BASE-TX LAN LEDs. Look at the condition of the LEDs, then examine the corresponding LED tables to better understand the indications.

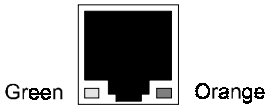



**Figure 5 – LAN Port LEDs**

**LAN Port LED Indicators**

| LED | Indicator | Description |
|---|---|---|
| Orange | On | The cable connections between the LAN port and the hub are good. |
| | Off | The cable connections between the LAN port and the hub are faulty. |
| | Flashing | The LAN port is sending or receiving network data. The frequency of the flashes increases with increased traffic. |
| Green (100) | On | The LAN port is operating at 100 Mbps. |
| | Off | The LAN port is operating at 10 Mbps. |

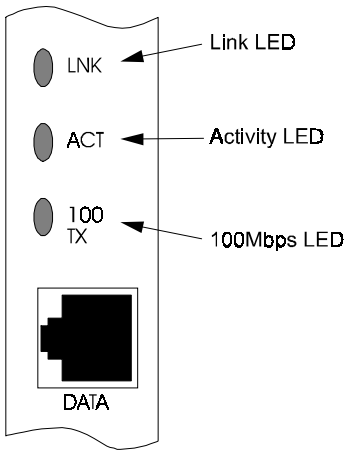



**Figure 6 – 10/100BASE-TX LAN LEDs**

**10/100BASE-TX LAN LED Card Indicators**

| LED | Indicator | Description |
|---|---|---|
| LNK | On | The cable connections between the card and the device to which this interface is attached are good. |
| | Off | The cable connections between the card and the device to which this interface is attached are faulty. |
| ACT | On or Flashing | The card is sending or receiving network data. The frequency of the flashes increases with increased traffic. |
| | Off | The card is not sending or receiving data. |
| 100 TX | On | Operating at 100 Mbps. |
| | Off | Operating at 10 Mbps. |

# Chapter 3

# Assigning a System Identity

This section describes two methods, IP Address Configuration Utility and Serial Interface Configuration Procedure, that allow you to assign a Management IP Address, subnet mask, and optional default gateway address to your Extranet Switch. The Management IP Address is the address that is used for all system services, such as HTTP, FTP, and SNMP. The Management IP Address will enable you to manage the Switch from a Web browser.

Figure 7 shows the choices you have when first configuring your Management IP Address, subnet mask, and default gateway. The IP Address Configuration Utility is on a diskette that comes with your Switch.

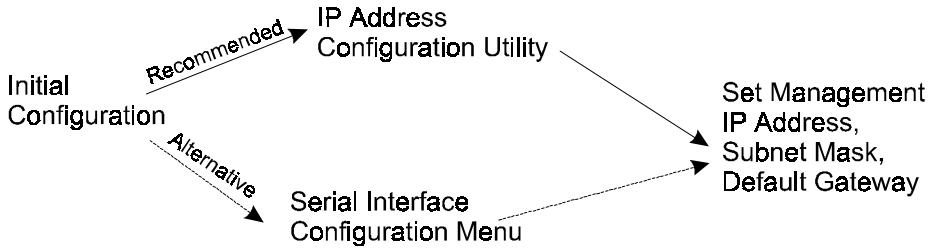



**Figure 7 – Initial Management IP Address Configuration**

# Startup Configuration Requirements

This section provides descriptions of the fields that you must complete with either the IP Address Configuration Utility or the Serial Interface Configuration procedure.

## Management IP Address

Enter a Management IP Address for the system. You need this address to manage all system services, such as HTTP, FTP, and SNMP. This address must be accessible from one of the Switch's private physical interfaces. In order to do so, the Management IP Address must map to the same network as one of the private interfaces.

For example, if you are planning on assigning IP address 10.2.3.3 with the subnet mask 255.255.0.0 to the private physical interface, then the Management IP Address must reside in the 10.2 network.

Carefully record the Management IP Address. Later, during the Quick Start or the Guided Configuration, you will be asked to supply IP addresses for the physical interfaces.

## Subnet Mask

The Subnet Mask defines how many bits of the IP Address represent the network the device is on and how many bits represent the host's ID on the network.

The device uses the Subnet Mask to determine which IP Addresses are directly reachable on the network and which must be routed through a gateway. A sample IP Address is 10.2.3.3 with a Subnet Mask of 255.255.0.0. This indicates that all hosts with addresses 10.2.*n*.*n* are directly reachable.

## Default Gateway

The Default Gateway is where packets are routed onto the private network if there is not a specific route in the routing table to the desired location.

# Private and Public Interfaces

The Bay Networks Extranet Switch provides secure access between your local area network (LAN) and Public Data Networks like the Internet. Throughout this document the term Private refers to the LAN within your corporation, and the term Public refers to Public Data Networks. This concept is important because the Public interface accepts only tunneled protocols, while the Private interface accepts both regular (nontunneled) and tunneled protocols. You must be careful to correctly configure each interface of the Switch for proper network security.

The LAN port is configured to be Private by default. Bay Networks recommends that you connect this interface to your corporate LAN. Additional interfaces that are inserted into the expansion slots are set to Public by default.

## Private

Indicates that this interface is attached to the internal corporate LAN and accepts regular networking protocols such as TCP/IP, FTP, HTTP, etc. The Private interface also accepts tunneled protocols (e.g., IPsec, PPTP, L2TP, and L2F) that can be used for secure management access to the Switch.

## Public

Indicates that this interface is attached to a Public Data Network like the Internet. The Switch rejects nontunneled protocols and only accepts tunneled protocols like IPsec, PPTP, L2TP, and L2F. For diagnostic purposes, the ability to PING the Public interface is also supported.

# IP Address Configuration Utility

Bay Networks provides a utility to perform the initial configuration of a Switch.

## Requirements

To assign the Switch a Management IP Address with the Bay Networks IP Address Configuration Utility you must have the following:

- A PC running Windows 95 or Windows NT with a functioning TCP/IP stack.
- The PC must be running on the same subnet as the Switch that is to be configured, and it must have an operational network connection.

If your environment does not match these requirements, then you must use the serial interface configuration.

To test the function of your TCP/IP stack, send a PING command to any host.

## Running the IP Configuration Utility

The program "BayNetIP.exe" is on a diskette labeled "IP Address Configuration Utility" that accompanies the Switch. You can copy the utility to your hard disk and execute it from there, or you can load it from the diskette drive. The "BayNetIP.exe" program launches the IP Address Configuration Utility, which allows you to assign a Management IP Address and subnet mask to the Switch. To run "BayNetIP.exe," follow these steps:

1. Insert the diskette into the A: drive and select Start→Run:

   ```
   a:\BayNetIP.exe
   ```

   or, open the "My Computer" icon on the desktop and open the "3½ Floppy (A:)" drive, then double-click on the icon:

The following display appears while the program searches for a Bay Networks Switch that has not been configured with a Management IP Address and subnet mask.


**Figure 8 – Serial Number Search Display**

2. The program automatically enters the Serial Number for the first Switch discovered into the table of discovered Switches.

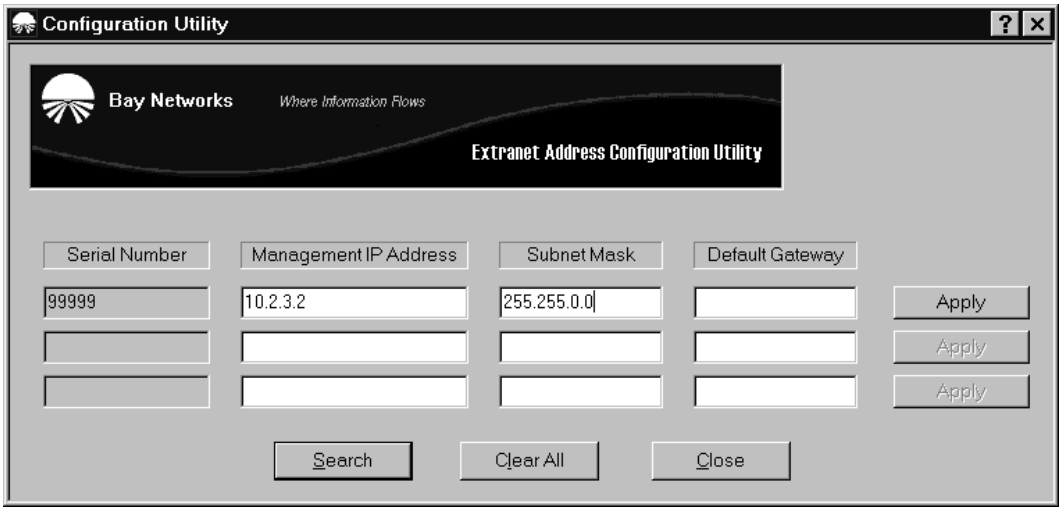



**Figure 9 – IP Address Configuration Utility Display**

3. Assign a Management IP Address and Subnet Mask to the Switch; the Default Gateway address is optional and can be added later (refer to Startup Configuration Requirements on page 10 for descriptions of the required fields).

   If you have more than one Switch, click Search to automatically add the additional Switch serial numbers. To verify the Switches that have been discovered, you can refer to the serial number on the bar code on the back of the Switch.

4. Click Apply to configure the Management IP Address, Subnet Mask, and Default Gateway on the Switch. The IP Address Configuration Utility display disappears.

   When the Switch has completed updating its configuration with the Management IP Address, Subnet Mask, and optional Default Gateway, your default Web browser will automatically open to the Bay Networks Extranet Switch Welcome display.

5. Click Close to shut down the IP Address Configuration Utility.

   **NOTE:** Before moving the Switch from one network to another, change the Management IP Address, subnet mask, and default gateway. Otherwise, you will need to follow the Serial Interface Configuration procedure to access your Switch because it will not be accessible from a Web browser with an invalid address.

# Serial Interface Configuration

**NOTE**: Bay Networks recommends that you use the IP Address Configuration Utility (refer to page 12) to provide the Switch with its initial IP configuration information.

Alternatively, you can use this procedure to access the Switch via the Serial Interface of your PC. Typically the Serial Interface configuration procedure is only necessary in a system recovery situation. The Serial Interface allows you to give the Switch a Management IP Address, Subnet Mask, and Gateway IP Address so that you can use a Web browser for management.

## Prerequisites

The terminal emulator on your PC must use the following communications parameters:

- 9600 Baud
- 8 Data bits
- 1 Stop bit
- No Parity
- No Flow Control

## Procedure

1. Connect the serial cable from the Switch's serial cable port to a terminal or a communications port of a PC.

2. Using a terminal emulation program, such as Hyper Terminal, press the Enter key and you are prompted to enter a user name and password. The factory default user name and password are:

   ```
   User name:  admin
   Password:   setup
   ```

   A menu appears that allows you to enter the following:

   - Management IP Address
   - Management IP Subnet Mask
   - Gateway IP Address (optional)
   - Allow HTTP Management (default)
   - Controlled Crash

3. Follow the screen prompts. Descriptions of the fields required to complete this procedure are in the section, Startup Configuration Requirements, on page 10.

   **Allow HTTP Management** enables you to manage the Switch via a Web browser.

   A **Controlled Crash** forces the Switch into a hard crash state, which creates a core dump file that Bay Networks Customer Support personnel can analyze to help diagnose problems (e.g., the Switch is hung or it does not respond to PINGs). Do not select "C) Controlled Crash" unless instructed to do so by Bay Networks.

A Sample display follows:

```
Welcome to the Bay Networks Extranet Switch
Copyright 1998, Bay Networks
Date:  4/29/98
Unit Serial Number:  01001
Please enter the administrator's username: admin
Please enter the administrator's password: setup
     1) Management IP Address
     2) Management IP Subnet Mask
     3) Gateway IP Address
     4) Allow HTTP Management
     C) Controlled Crash
     E) Exit
Please select a menu choice (1 – 4, C, E):
```

**Figure 10 – Sample Serial Interface Display**

4. Once you complete the configuration, type E to Exit. You can then manage the Switch from a Web browser.

| | |
|---|---|
| **IMPORTANT:** | This Administrator's Password is also the Primary Administrator's Password. This password guarantees access to the Switch via the Serial Port or a Web browser. Refer to page 29 for additional details. |

# Chapter 4

# Managing the Switch

This chapter describes the recommended Web browsers, the default login and passwords to gain access to the Bay Networks Extranet Access Switch, and the Quick Start Configuration.

## Recommended Web Browser Versions and Settings

Bay Networks Extranet Manager uses Java, JavaScript, and HTML features. For the management interface to function properly, verify that your Web browser meets the following minimum requirements.

### Platforms Supported

Windows 95, Windows NT, or Macintosh.

### Browser Versions

**Microsoft Internet Explorer –** Version 3.01 or later (4.70.1215 or later).

**NOTE**: The Help→About box of Internet Explorer, Version 3.01 actually displays: Version 3.00 (4.70.1215).

Not using a recent version of Internet Explorer causes the upper-left and top-left corners of the management displays to remain gray rather than displaying the navigational menu and the current menu selection, respectively.

**Netscape Communicator** – Version 4.0 or later, and Netscape Navigator 3.x or later.

**Netscape Navigator Version 3.x Cache Settings –** To ensure that you are viewing the latest display information when using Netscape Navigator Version 3.x, enable the "Every Time" option under the setting Options→NetworkPreferences→Cache: Verify Documents.

### Display Setting

Verify system display color setting is set to 256 colors or greater.

# Extranet Switch Welcome Display

The Welcome display allows you to enter any of the three configuration areas for the Bay Networks Extranet Switch, including:

- Quick Start Configuration
- Guided Configuration
- Manage Extranet Switch
- Registration
- Notebook

Before entering the configuration options, you should first register to activate licenses, warranties, and services.

Figure 11 shows the alternatives you have when first configuring your Switch. Bay Networks recommends that you begin with the Quick Start or the Guided Configuration. Once you are familiar with the Switch's navigation menu and capabilities, then you will want to select Manage Extranet Switch.

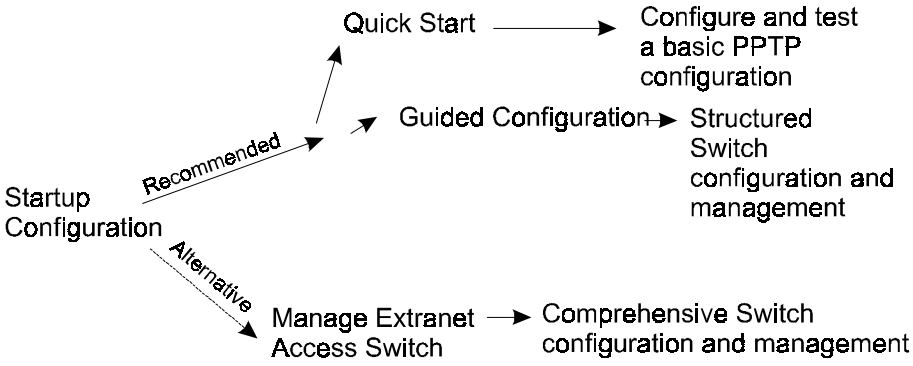



**Figure 11 – Configuration Choices**

Figure 12 shows a sample Extranet Switch Welcome display. Descriptions of each configuration option follow. A detailed checklist describes things you will need to properly configure your Switch. Then full details of the different procedures are described.

Complete details for configuring and monitoring the Switch are in the *Bay Networks Extranet Switch Administrator's Guide.*

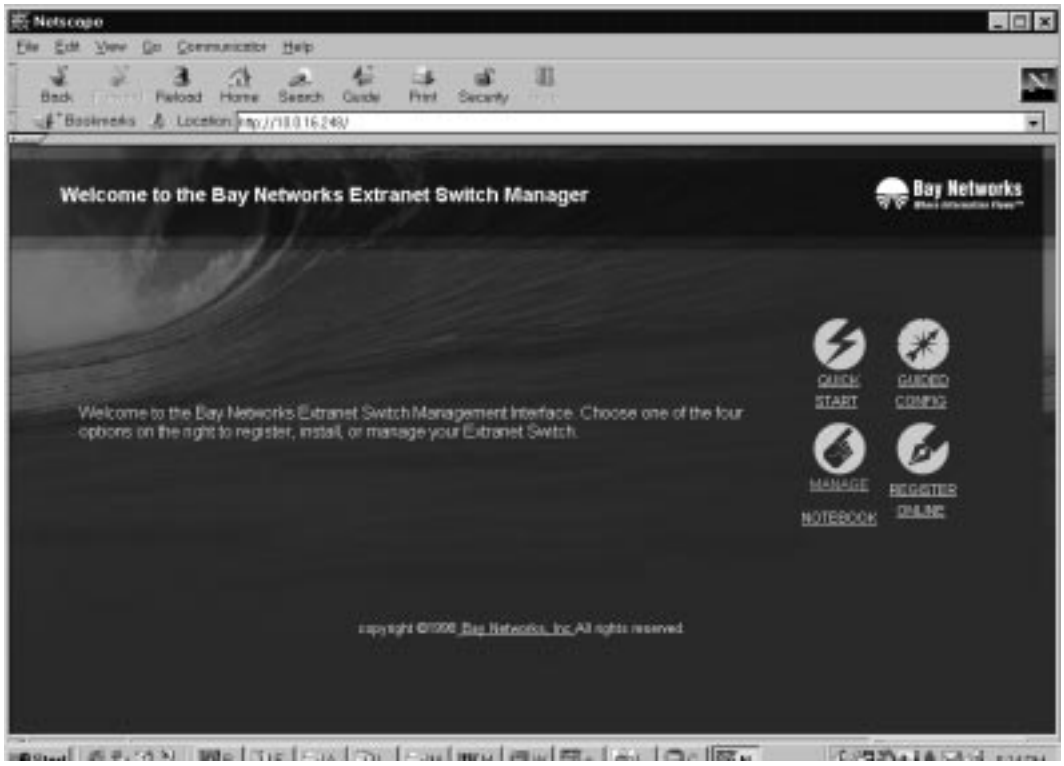



**Figure 12 – Bay Networks Extranet Switch Welcome Display**

# Preparing for Configuration

To properly prepare for Installation and Configuration of the Bay Networks Extranet Switch, you should have the following items available:

- A Management IP Address for the system. You need this address to manage all system services, such as HTTP, FTP, and SNMP.
- An IP Address for the LAN port that is available on the system board.
- Any number of Public IP Addresses; e.g., one IP address for each Public LAN Interface and one IP address for each T1 WAN interface.
- A plan to distribute IP addresses to clients when connections are requested; e.g., via a DHCP server or an internal client address pool (with an address pool you will need a range of IP addresses).
- An Authentication database: If you are not using internal authentication via the LDAP database then make sure you have either the external LDAP or the RADIUS server(s) IP Address and password or shared secret.
- An external accounting server, such as RADIUS, with its IP Address and shared secret (password).
- Client dial-in: Prepare the clients for the type of tunneling protocol they will be using. The PPTP client application is available on the Bay Networks CD for Windows 95, and it comes with Windows NT. Bay Networks also provides the IPsec client on the Bay Networks CD.
- A complete network topology of the "environment" in which you are testing the Switch, including the Switch, the default router address, and any other IP addresses that you think might be required.

## Quick Start

Click to begin the Quick Start Configuration. This option allows you to configure interfaces, set up PPTP tunnels for up to three users, and establish a connection to the Switch. If you prepare for the configuration (as recommended on page 24), the Quick Start can take as little as 15 minutes to complete.

## Guided Configuration

Click to begin the Guided Configuration. This option allows access to all Configuration Management facilities. However, the design and structure of the Guided Configuration is best followed using the top-to-bottom layout provided. This approach walks you through the entire Navigational Menu from the Profiles to the Admin selections.

Each functional area begins with a summary of the objectives of the area and then steps you through the area (e.g., Profiles), one subsection at a time. On-line context sensitive help is available at each subsection to supplement the summary.

Provided you have the information required to set up the Switch, the Guided Configuration can to take two to three hours to complete, depending on how extensive your configuration will be.

## Manage Extranet Switch

Click to begin a standard configuration and management session. This option allows access to all configuration management facilities. Bay Networks recommends that you follow the Quick Start or Guided Configuration for your first configuration.

## Registration

Click to register the Switch with Bay Networks. It will only take a few minutes and it will give you access to the latest software and technical tips. Your Switch requires Internet access in order to register.

## Notebook

Click to activate the notebook display mode. The Bay Networks Extranet Switch Manager then runs in notebook display mode, which better fits notebook displays.

## Logging in and Supplying a Password

Start up a Web browser and enter your Switch's Management IP Address. Select an option in the navigational menu and submenu, and then you are prompted for the Login and Password. Enter the system default Login and Password in lowercase characters, as follows:

```
Login: admin
Password: setup
```

| | |
|---|---|
| **IMPORTANT:** | If you change your password and later need to access the Serial Interface Configuration, you must then enter the modified password. The factory default password is no longer valid in this case.<br><br>Also, make sure you change the default Administrator's Login and Password as soon as possible (refer to the Admin→Administrator display. You should then guard the Login and Password carefully. |

# Quick Start Configuration Prerequisites

This display acts as a checklist for you to prepare for the Quick Start Configuration. Assembling the information beforehand, and verifying that you can establish a PPTP Client session, makes the Quick Start easy.


**Figure 13 – Quick Start Prerequisites Display**

## Required Environment

This section describes the environment you must be using to perform the Quick Start Configuration. If this does not describe your environment, use the Guided Configuration.

### Point-to-Point Tunnel Protocol (PPTP) tunnel access method

PPTP is a tunneling protocol supported by Bay Networks, Microsoft, and other vendors. The PPTP client is available for Windows 95 on the Bay Networks CD and comes with Windows NT 4.0 and later.

### Static IP addresses, Dynamic Host Configuration Protocol (DHCP) server address allocation, or an Internal Client Address Pool

A DHCP Server on the private LAN segment dynamically assigns IP addresses on behalf of remote users. The DHCP server is automatically discovered via broadcasting on the private interface that is associated with the Management IP Address. With an Internal Client Address Pool you will need a range of IP addresses.

### Local Lightweight Directory Access Protocol (LDAP) database authentication

LDAP is a standard protocol for Internet directory services that is based on directory entries. A *directory service* is a central repository of user information. The local database is internal to the Switch.

An LDAP server and associated database will be set up locally on the Switch for the Quick Start procedure. Later, you can switch to a network-available external LDAP server using the LDAP Intermediate File (LDIF) data format.

## Prerequisites

- IP configuration information (refer to Startup Configuration Requirements on page 10 for additional information).
  - A Management IP Address for the Switch
  - Subnet Mask for the local subnet
- User IDs and Passwords
  - PPTP Users (up to 3)
  - Administrator

## Post-Configuration Testing

- A PPTP remote user dialing in from an external system.

  Refer to the *Bay Networks Extranet Switch Administrator's Guide*, the Switch's online help, and the Microsoft PPTP documentation for additional information.

# Configuration

This display allows you to add a LAN port IP Address and Subnet Mask, establish the tunnel as Private (your private LAN) or Public (public data networks), and configure up to three PPTP Users and an Administrator with User IDs and Passwords. Additionally, you can set the system's Date and Time.

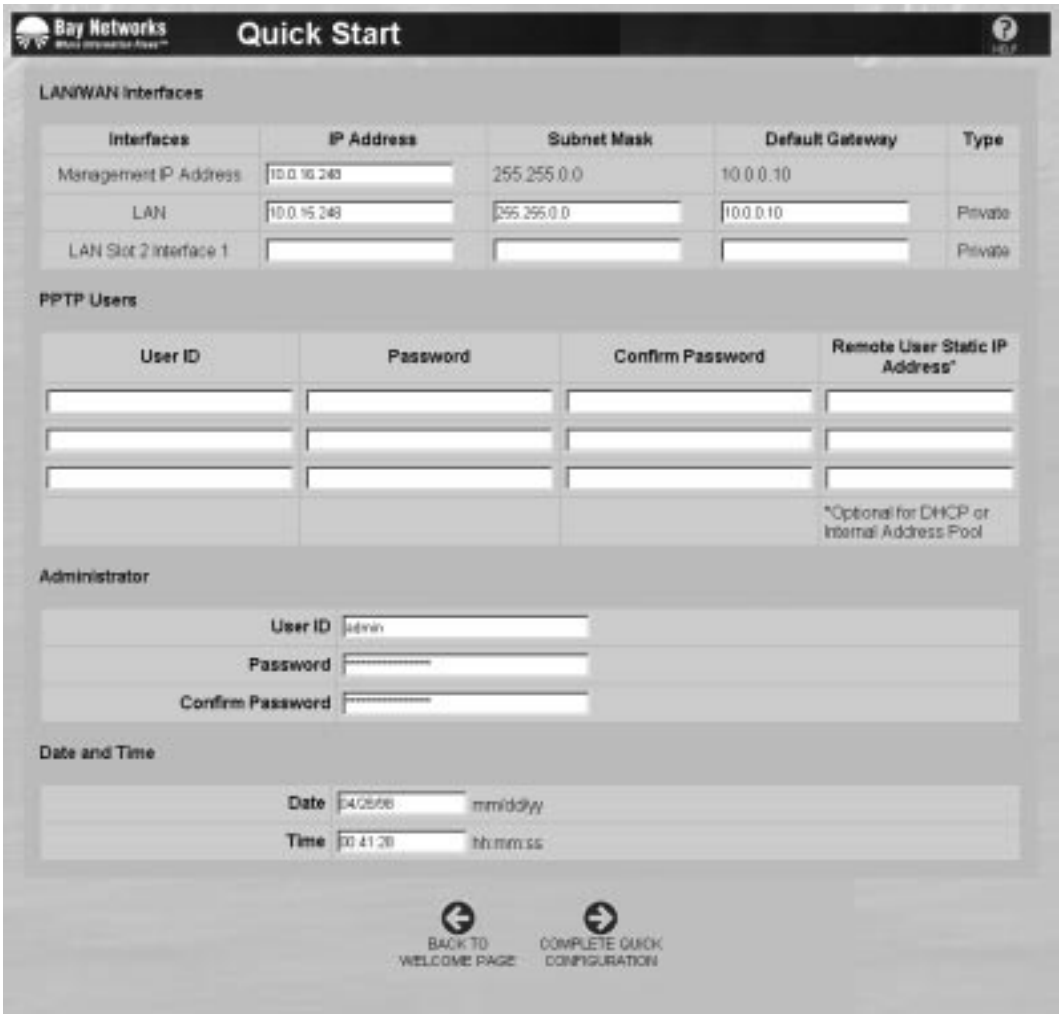



**Figure 14 – Quick Start Configuration Display**

## LAN/WAN Interfaces

### Interfaces

Lists the Management IP Address, LAN port, and any LAN or WAN cards that you have installed in the Switch.

### IP Address

Enter an IP address for each interface on the Switch, including the LAN port. These IP addresses are used for tunnel creation. The IP Address consists of 32 bits, which are written as four octets in dotted-decimal format. For example:

```
192.168.34.21
```

Note that the interface IP Address configuration information is required, not the Management IP Address, which you already configured through the initial IP Address configuration.

### Subnet Mask

The Subnet Mask defines how many bits of the IP Address represent the network the device is on and how many bits represent the host's ID on the network.

The device uses the Subnet Mask to determine which IP Addresses are directly reachable on the network and which must be routed through a gateway. A sample IP Address is 10.2.3.3 with a Subnet Mask of 255.255.0.0. This indicates that all hosts with addresses 10.2.*n*.*n* are directly reachable.

### Default Gateway

The Default Gateway is where packets are routed onto the private network if there is not a specific route in the routing table to the desired location. Enter a Default Gateway to LAN or WAN Interface cards, as necessary.

### Type

The default configuration for Switches assigns the Management LAN interface as Private, and the LAN and WAN card interfaces as Public.

#### Public

Indicates that this interface is attached to a Public data network like the Internet. The Switch rejects nontunneled protocols and only accepts tunneled protocols like IPsec, PPTP, L2TP, and L2F and the diagnostic protocol PING on a Public interface.

A host can send only enough packets to a Public interface to establish a tunnel connection. If the tunnel is not established before the preset maximum-number-of packets-allowed counter is reached, then the packets from that host are discarded.

#### Private

Indicates that this interface is attached to the Private network and it can accept nontunneled networking protocols such as TCP/IP, FTP, HTTP, etc. The Private interface also accepts tunneled protocols (e.g., IPsec, PPTP, L2TP, and L2F) that can be used for secure management access to the Switch.

## PPTP Users

### User ID

Enter a User ID. The User ID works along with the password as the authentication mechanism when attempting to access your local LAN through the Switch.

### Password

Enter a user Password. You should use a minimum of eight characters, including upper and lowercase letters and numbers. Avoid using common names and words found in the dictionary. For example, a password constructed as "AxSessPw4U" is much better than "dog" or "Barney."

**NOTE**: Do not use a password of 16 pound signs (#).

### Confirm Password

Reenter the assigned password to verify that you have typed the intended password correctly.

### Remote User Static IP Address

Enter an IP Address to be assigned to this user when establishing a PPTP tunnel session. Note that this IP Address is unnecessary if you assign user IP addresses from either a DHCP server or an internal address pool.

## Administrator

The Administrator Settings allow you to change the Primary Administrator User ID (UID) and Password. The Primary Administrator User ID and Password combination always has access to all displays and controls. This UID is also used to access the serial port and the recovery disk.

Note that there can be only one Primary Administrator.

### User ID

Enter an appropriate User ID for the Primary Administrator. This UID has the privileges to modify and view all controls in the Switch.

### Password

Enter a user Password for the Primary Administrator.

**NOTE**: Do not use a password of 16 pound signs (#).

### Confirm Password

Reenter the assigned password for the Primary Administrator to verify that you have typed the intended password correctly.

## Date and Time

### Date

Enter the current month, day, and year (mm/dd/yy).

### Time

Enter the current hour, minute, and seconds (hh:mm:ss) as displayed by a 24-hour clock (00:00:00 to 23:59:59).

## Automatic Backup

The Automatic Backup display under the Manage configuration option allows you to configure regular intervals when your system files are saved to designated host backup file servers.

| | |
|---|---|
| **IMPORTANT:** | You should configure Automatic Backups immediately so that you will not lose system or configuration information in case of problems. |

You configure the Automatic Backup servers from the Admin→Automatic Backup display.

# Extranet Access Client Installation

## Windows 95

To install the Bay Networks Extranet Access Client onto a Windows 95 PC, you must first copy and install four files that are on the Bay Networks Extranet CD in the Client folder. International software users should note that you must go to the Microsoft web site *http://support.microsoft.com/support* to get the MSDUN12 patch.

1. First, install Msdun12.exe (Microsoft Dial-up Networking update) by double-clicking on the file name. The installation is self-explanatory. You might need your Windows 95 CD (in case the CD was not copied onto your drive). During the installation you will be asked to reboot your system *twice*.

2. Next, install Wsockupd.exe (Winsock update) if you are using the retail version of Windows 95. Reboot your system after installing the update. You now have the Microsoft PPTP tunneling client installed.

3. Complete the IPsec installation by running the Eac_10d.exe, (Bay Networks Extranet Access Client). The installation is self-explanatory. You might need your Windows 95 CD-ROM (in case the CD was not copied onto your drive). As prompted at the end of the installation, reboot your system.

4. If you do not care about operating within the Network Neighborhood, skip this step. To operate within the Network Neighborhood, enable the following items under the Network Control Panel (click the Start menu button, select Settings→Control Panel, then double-click on the Network icon to open the Network Control Panel).

    A. Under the box titled “The following network components are installed,” verify that the Client for Microsoft Networks is listed. If it is not, click on the ADD button, then select CLIENT, then click the ADD button again. Select Microsoft followed by Client for Microsoft Networks and finally the OK button. You will need your Windows 95 CD if it is not already copied on your system.

B. Under the same box titled “The following network components are installed,” make sure that NetBEUI is not installed. To verify this, scroll down through the list box and look for any lines that have NetBEUI in them. If there are any lines that include NetBEUI, click on the line, and then click on the Remove button. This forces the Network Neighborhood to use NetBIOS over TCP/IP, which is compatible with the Extranet Switch.

C. Under the Identity tab, configure the Workgroup to be the same as your company's internal workgroup. For example, "baynetworks."

D. Next under the Identity tab, verify that the Computer Name is different from your PC at work. Otherwise, you would be attempting to log a second unit with the same name onto the network.

E. If you have made any changes in the Network Control Panel, click OK, then reboot the system.

5. Double-click on the Extranet Connection Manager icon.

A. Enter a new Connection Profile Name.

B. Create a new Dial-up Connection.

C. Click the Tool button (next to the Dial-up Connection list box), select New, and follow the wizard.

D. Create a new Extranet Connection.

E. Click the Tool button (next to the Extranet Connection list box), select New IPsec Connection, and follow the wizard.

F. Click the Connect button.

## Windows NT 4.0

To install the Bay Networks Extranet Access Client onto a Windows NT 4.0 PC, you must first copy and install the Extranet Access Client (Eac_10d.exe) that is on the Bay Networks Extranet Switch CD in the Client folder.

1. Install Eac_10d.exe by double-clicking on the program name. The installation is self-explanatory. As prompted at the end of the installation, reboot your system.

2. Install the Remote Access Service under the Network Control Panel (click the Start menu button, select Settings→Control Panel, then double-click on the Network icon to open the Network Control Panel). Select the Services tab and click on Add. Scroll down to select "Remote Access Service" and click OK.

3. Under the Protocols tab, verify that NetBEUI is not installed. If NetBEUI is listed, click on it, then click on the Remove button. This will force the Network Neighborhood to use NetBIOS over TCP/IP, which is compatible with the Switch. Click the OK button and reboot your system.

4. Double-click on the Extranet Connection Manager icon.

    A. Enter a new Connection Profile Name.

    B. Create a new Dial-up Connection.

    C. Click the Tool button (next to the Dial-up Connection list box), select New, and follow the wizard.

    D. Create a new Extranet Connection.

    E. Click the Tool button (next to the Extranet Connection list box), select New IPsec Connection, and follow the wizard.

    F. Click the Connect button.

# Chapter 5
# Rack Mounting

This chapter describes two methods you can use to mount your Switch into a chassis rack.

- Rack-mount brackets for use with a two-post rack (page 36).
- Sliding rails for use with a four-post rack (optional purchase).

Following are standard rack-mounting considerations that Bay Networks recommends you follow:

- The maximum recommended ambient temperature is 40 degrees Centigrade. Additionally, make sure the internal temperature of the rack does not exceed 40 degrees.
- Do not block the power supply vents or otherwise restrict airflow when installing the Switch into a rack.
- Make sure that your rack is properly stabilized so that it will not tip over under the weight of the Switch and other devices.
- Make sure that the electrical branch circuits are capable of handling the Switch *and* other units in the rack before installing and powering up the Switch.
- Ensure that a reliable Earthing path is maintained in the rack system. The Switch is intended to be connected to an Earth ground.

## Mounting Brackets

The following illustration shows mounting brackets being attached to a Switch in preparation of a two-post rack mount installation. Position the brackets with the rack-mount bracket facing outward (as shown below). Optionally, you can mount the brackets in the rear of a rack.

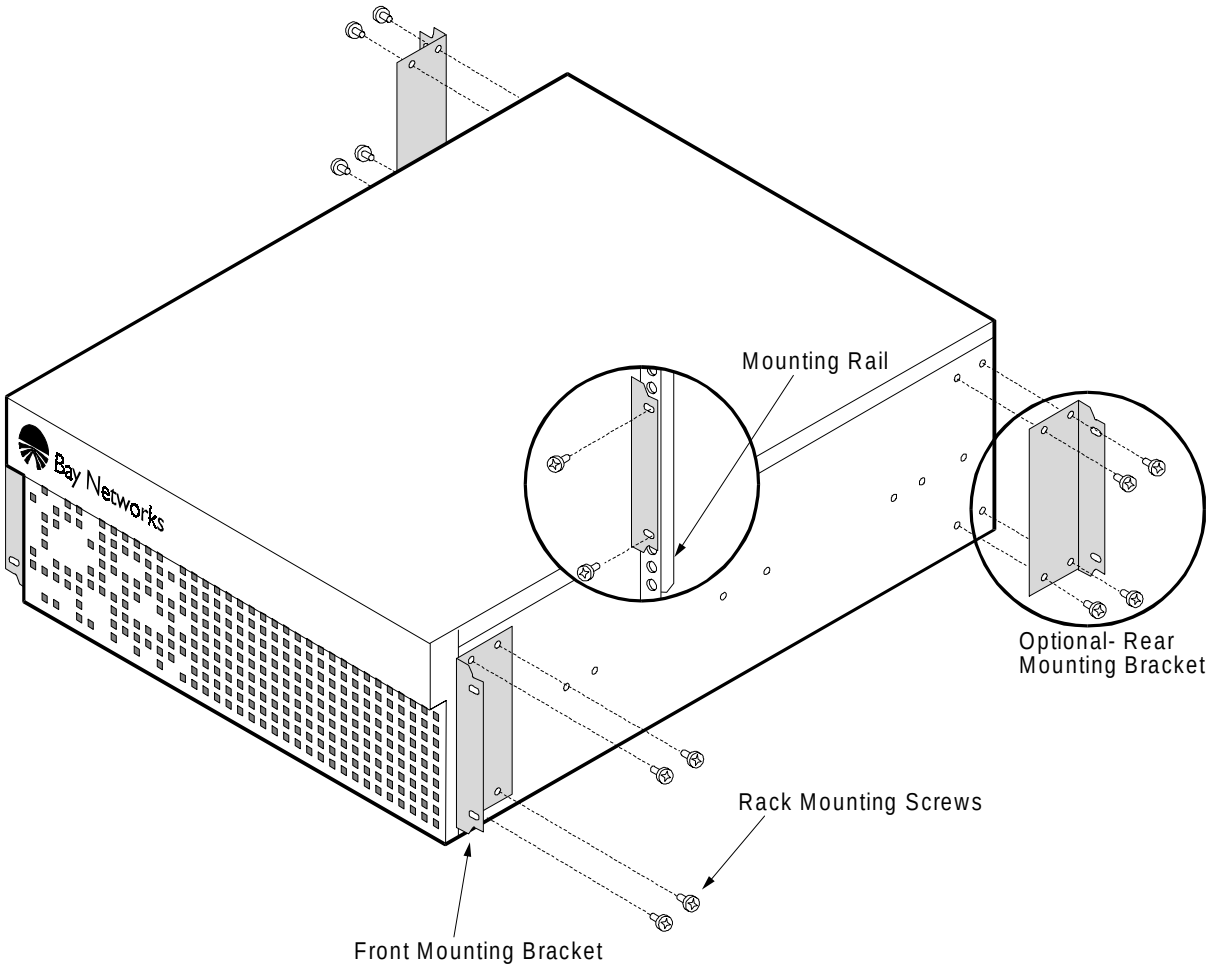



**Figure 15 – Bracket Installation for a Two-Post Chassis Rack Mount**

## Rack Mount Installation Procedure

Bay Networks recommends that you have two people available when installing the rack-mount brackets.

1. Position the bracket onto the Switch (as shown on the previous page), then screw in the four rack-mounting screws. Repeat this step on the other side of the chassis.

2. With one person holding the Switch in place, insert the two front screws on each side to secure the Switch and brackets into the rack.

## Sliding Rails (Optional)

The following illustration shows the optional sliding rail assembly that enables you to slide the Switch out of the rack and lift off the top cover for interior access. Note that the sliding rail kit is optional and is separately orderable.

**NOTE**: You must have a four-post rack to use the sliding rail mount assembly, and the rack must be at least 20-inches deep.

Optional extender brackets and hardware are provided in case your rack is deeper than 20 inches. Attach the extender brackets to the sliding rails.

Bay Networks recommends that you have two people available when installing the sliding rail assembly. The job is easier when one person holds the rail brackets to the rack sides while the other person secures the brackets to the rack. A second person is again necessary when sliding the chassis into the rails.

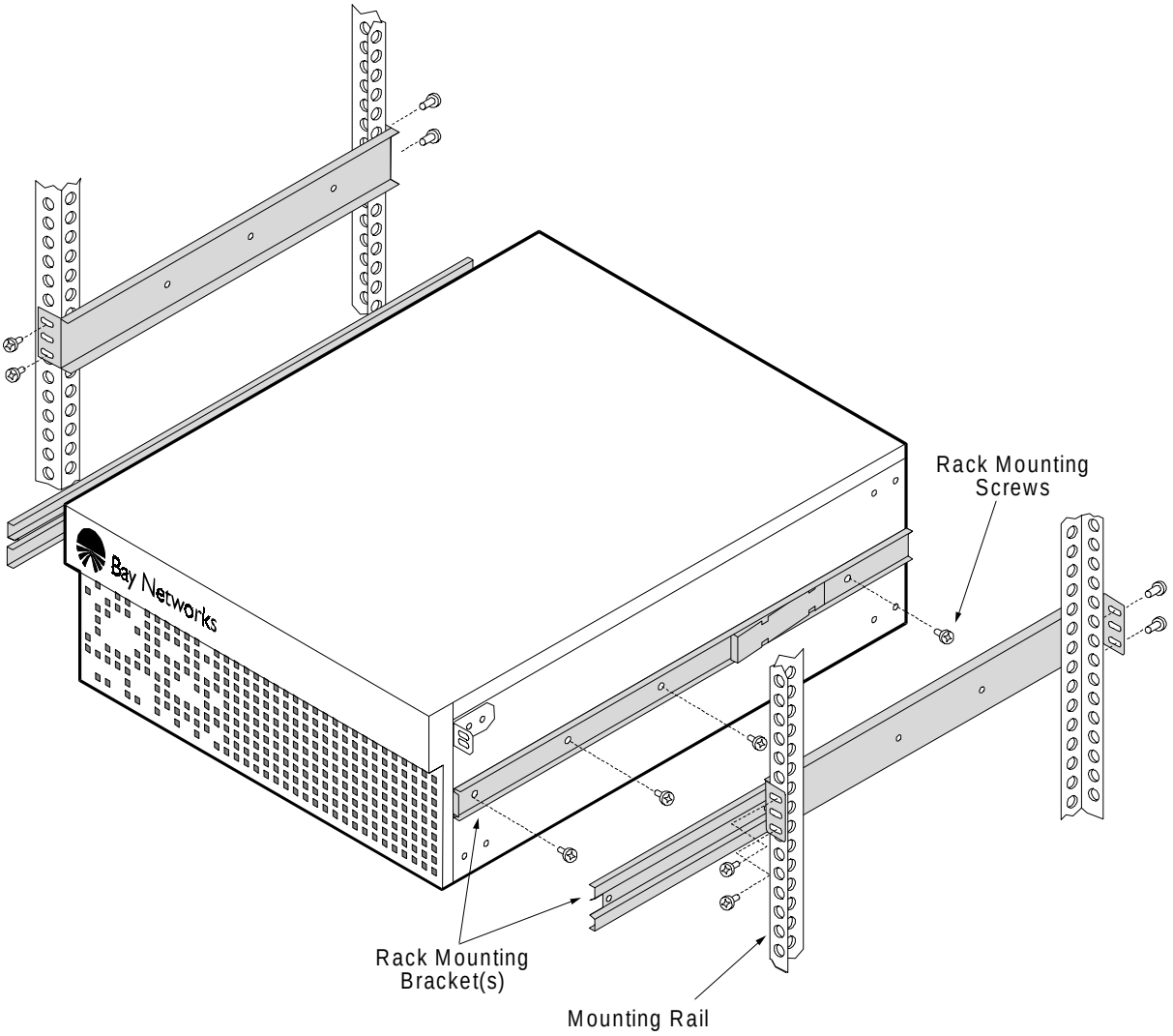



**Figure 16 – Sliding Rail Installation for a Four-Post Chassis Rack Mount**

## Sliding Rail Installation Procedure

**NOTES**:

- Insert all bracket mounting screws so that the screw heads are inside the slides.
- Do not use washers on the inside of the slides.
- Mount the side brackets parallel to each other.
- Determine if the unit will slide to the front or rear of the rack.

These instructions are for sliding the chassis forward; reverse the closed-end bracket for rearward travel.

1. Separate the slide rails from the rail bracket by pressing down on the lock-release spring.

2. Mount the rail brackets to the inside of the rack, screwing an end into each rail post. Do not tighten the screws until the chassis has been installed.

3. Mount the sliding rails to the chassis. Note that the closed-end bracket must be mounted at the front.

4. Mount the slide locking bracket to the top front left and right sides of the chassis.

5. Pull out the bracket inner-rails so that the ball retainers are fully forward. Install the chassis by positioning the slides into the slide rail brackets and pushing the chassis into the rack.

6. Verify that the chassis slides correctly by pulling it forward and pushing it closed. If it does not move smoothly, then the rails might not be aligned properly; check the alignment.

7. Adjust the slide's positioning until the movement is smooth. Then, tighten all screws.

8. Push the sliding rails in completely, then secure the rails by inserting a screw into the slide prevention bracket.

# Chapter 6

# Changing Hardware Configurations

This chapter describes how to change existing hardware configurations, including:

- Installing LAN or WAN cards or adding memory.
- Swapping out a power supply.

**NOTE**: Wear an antistatic band when handling electronic components for the Switch to avoid damaging them.

**WARNING:** Turn off the Switch and unplug it before installing LAN or WAN cards, system memory, or installing a new power supply.

To install LAN and WAN cards you must first remove the Switch's top cover. To replace a power supply or to use the Recovery Diskette, you must remove the front bezel of the Switch.

## Removing the Top Cover

The following illustration shows you how to remove the top cover from the Switch. You must remove the cover to:

- Install LAN or WAN cards.
- Install additional memory.
- Swap out a power supply.

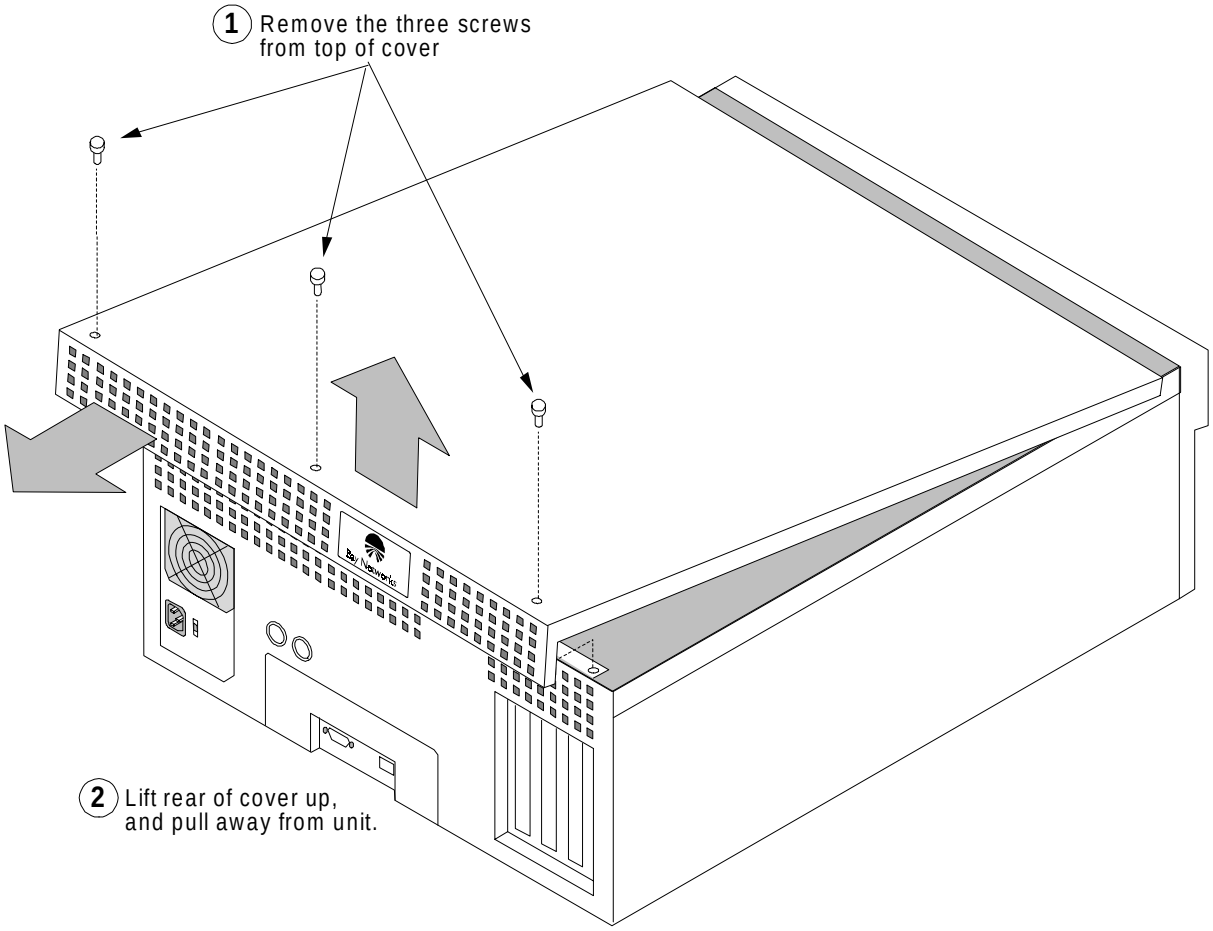



**Figure 17 – Removing the Top Cover**

1. Turn off the Switch's power and unplug it.
2. Remove the three screws at the top rear of the chassis.
3. Slide the top cover back and move it away from the chassis.

## System Board

Figure 18 shows the Switch's System Board, in particular the DIMMs, Option Cards Slots, Cooling Fans, and Replaceable Battery are noted.

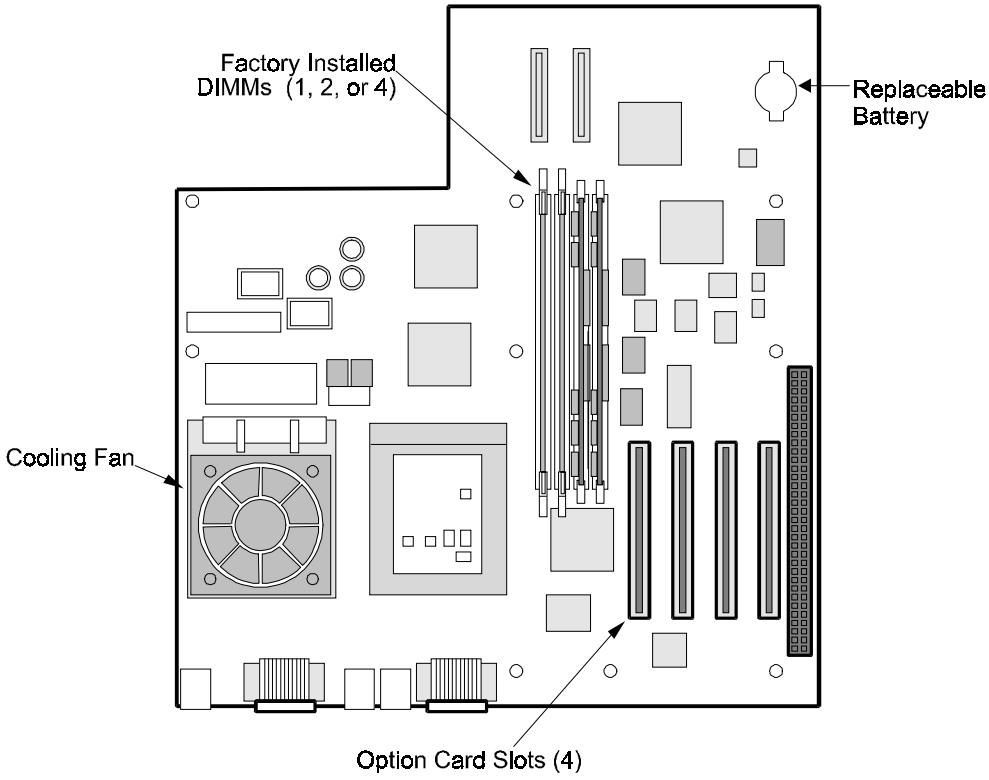



**Figure 18 – Switch's System Board**

**WARNING**: Beware of danger if the battery is incorrectly replaced. Replace with the same or an equivalent battery only, as recommended by the manufacturer. Also, dispose of used batteries according the manufacturer's instructions.

# Installing Option Cards

The following illustration shows you how install LAN or WAN option cards into the Switch. You can use Slots 1 to 3 for any mix of LAN and WAN cards. Note that Slot 4 is not supported.

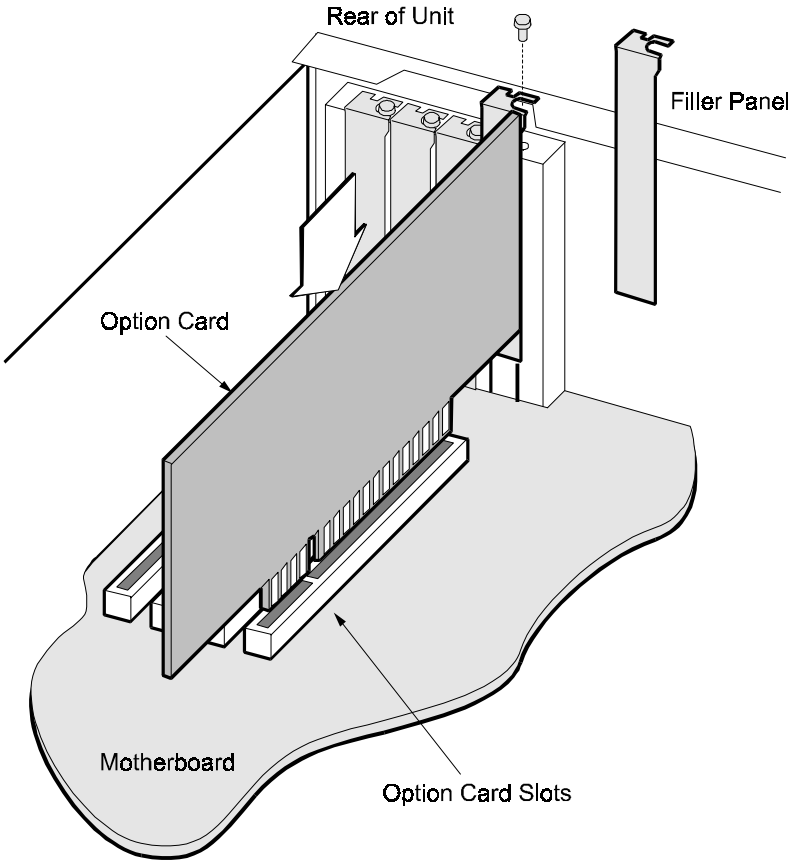



**Figure 19 – Installing LAN or WAN Cards**

1. Power off the Switch.
2. Remove the filler panel screw and pull out the filler panel.
3. Slide the option card into the intended slot. Make sure the card seats firmly and evenly into the card slot. If the card is not seated properly, it will not work.

# Installing Additional DIMMs

The following illustration shows you how to unlock a Dual Inline Memory Module (DIMM), and remove or install a DIMM. Install DIMM in the next available slot (i.e., if the DIMM # 1 slot is populated, then add the next DIMM to the DIMM # 2 slot).

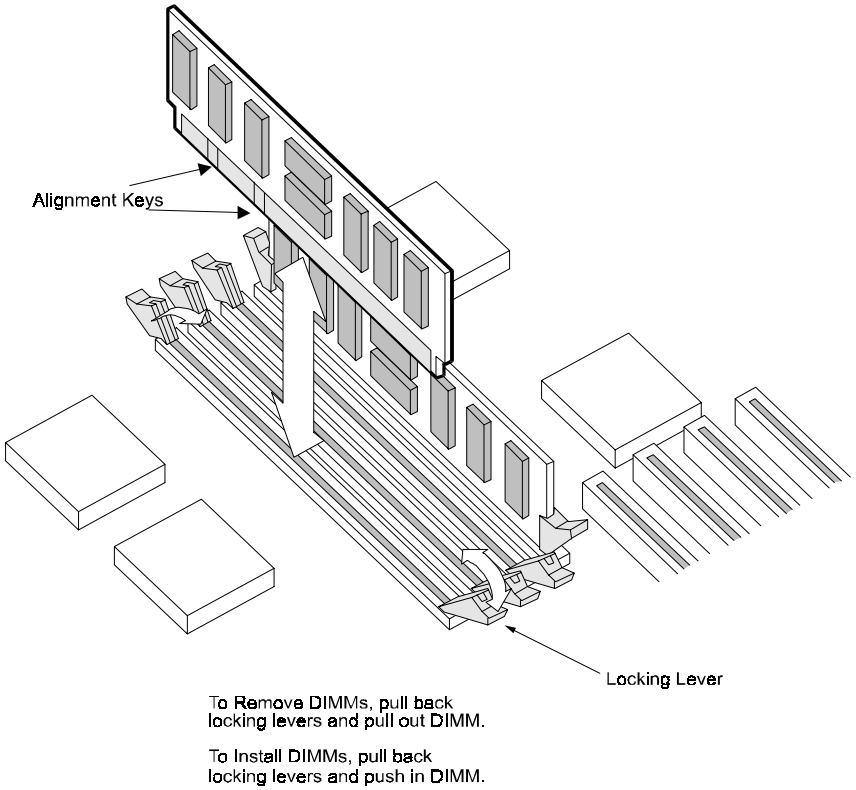



**Figure 20 – Installing Additional Memory**

1. Power off the Switch.
2. Press down the locking levers on both sides of the DIMM.
3. Pull the DIMM up to remove it from the slot.
4. Place a new DIMM in the slot, making sure to properly position the DIMM's alignment keys.
5. Pull up the locking levers on both sides of the DIMM, and snap in the DIMM, as necessary.

## Memory Options

The Switch ships with 64-MB memory installed. In case you want to increase the memory, this table lists memory from different vendors that has been tested with the Switch's System Board, and the vendor's accompanying part number.

| Vendor | Part Number |
|---|---|
| *2M x 72 (16Mb), Buffered ECC - 60ns* | |
| Micron Technology | MT9LD272G-60X |
| Kingston Technology Corp. | KTM2x72V82-60EG |
| PNY | 722086EDM2G11TC |
| | |
| *4M x 72 (32Mb), Buffered ECC - 60ns* | |
| Micron Technology | MT18LD472G-60X |
| Samsung | KMM372F400BK-6U |
| Kingston Technology Corp. | KTM4x72V44-60EG |
| Southland Micro Systems | SM572044A92E5G6 |
| PNY | 724056EDM4G20TC |
| | |
| *8M x 72 (64Mb), Buffered ECC - 60ns* | |
| Advantage Memory Corp. | AD872-4x4-60VE |
| IBM | IBM11M8735CBD-60 |
| Kingston Technology Corp. | KTM8x72V84-60EG |
| Micron Technology | MT9LD872G-6X |
| | |
| *16M x 72 (128Mb), Buffered ECC - 60ns* | |
| Samsung | KMM372F1600AK-6 |
| Kingston Technology Corp. | KTM16x72V44-60EG |
| Micron Technology | MT36LD872G-6 |
| PNY | 7280B6EDM4G11TK |

## Replacing a Power Supply

Turn off the Switch before attempting to replace a Power Supply. Replacing a power supply involves the following steps:

1. Remove the top cover (three screws).
2. Remove the four exterior screws that secure the Power Supply to the rear of the Switch.
3. Detach the connectors from the following devices:
   - Processor board
   - Hard disk drive(s)
   - Recovery diskette drive
4. Swap out the faulty power supply.
5. Reattach all cables and screws.

# Removing the Front Bezel

The following illustration shows you how to remove the front bezel from the Switch. You must remove the bezel to insert the Recovery Diskette.

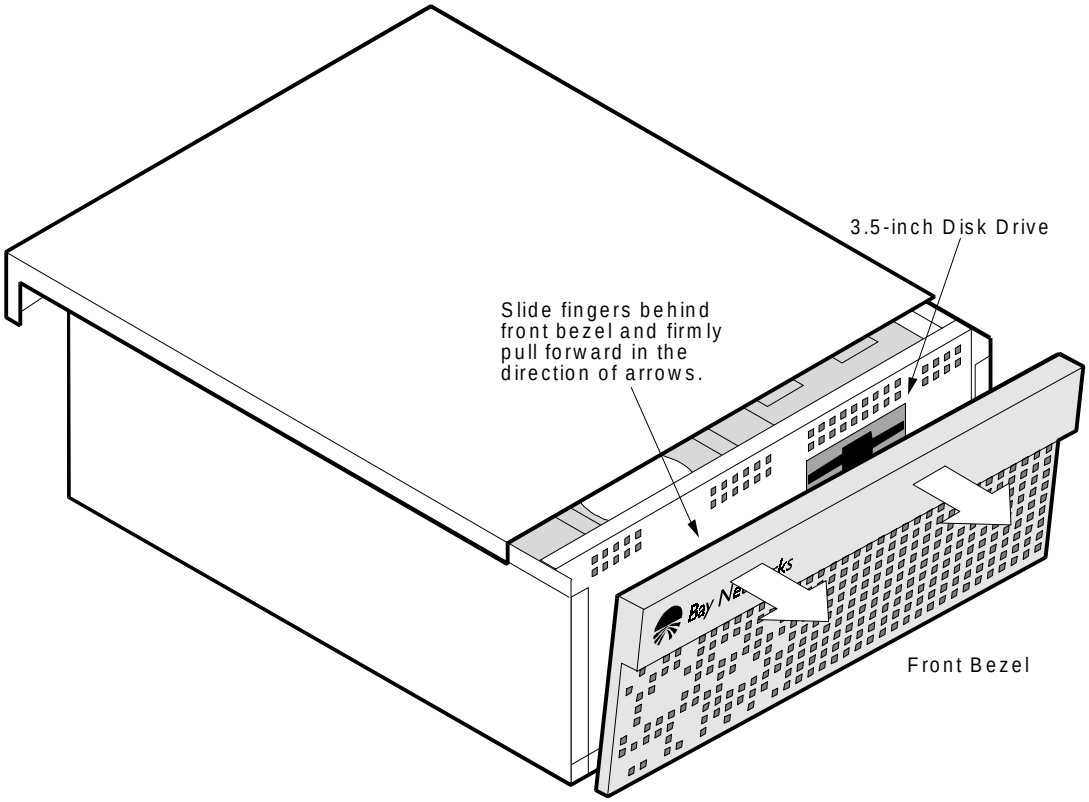



**Figure 21 – Front Bezel Removal**

Note that the first few times you remove the front bezel it might seem to resist removal. This is simply because the pins and snaps are new. After a few times, removal is easier. Sliding the top cover back is optional; it allows you to get a better grip on the front bezel for removal.

Remove the Switch front bezel as follows:

1. Optionally, remove the three screws at the top rear of the chassis, then slide the top cover back.
2. Slide your fingers between the front bezel and the Switch.
3. Pull forward firmly.

# Removing the Hard Disk Drive

The following illustration describes how to remove a Hard Disk Drive from the Switch.

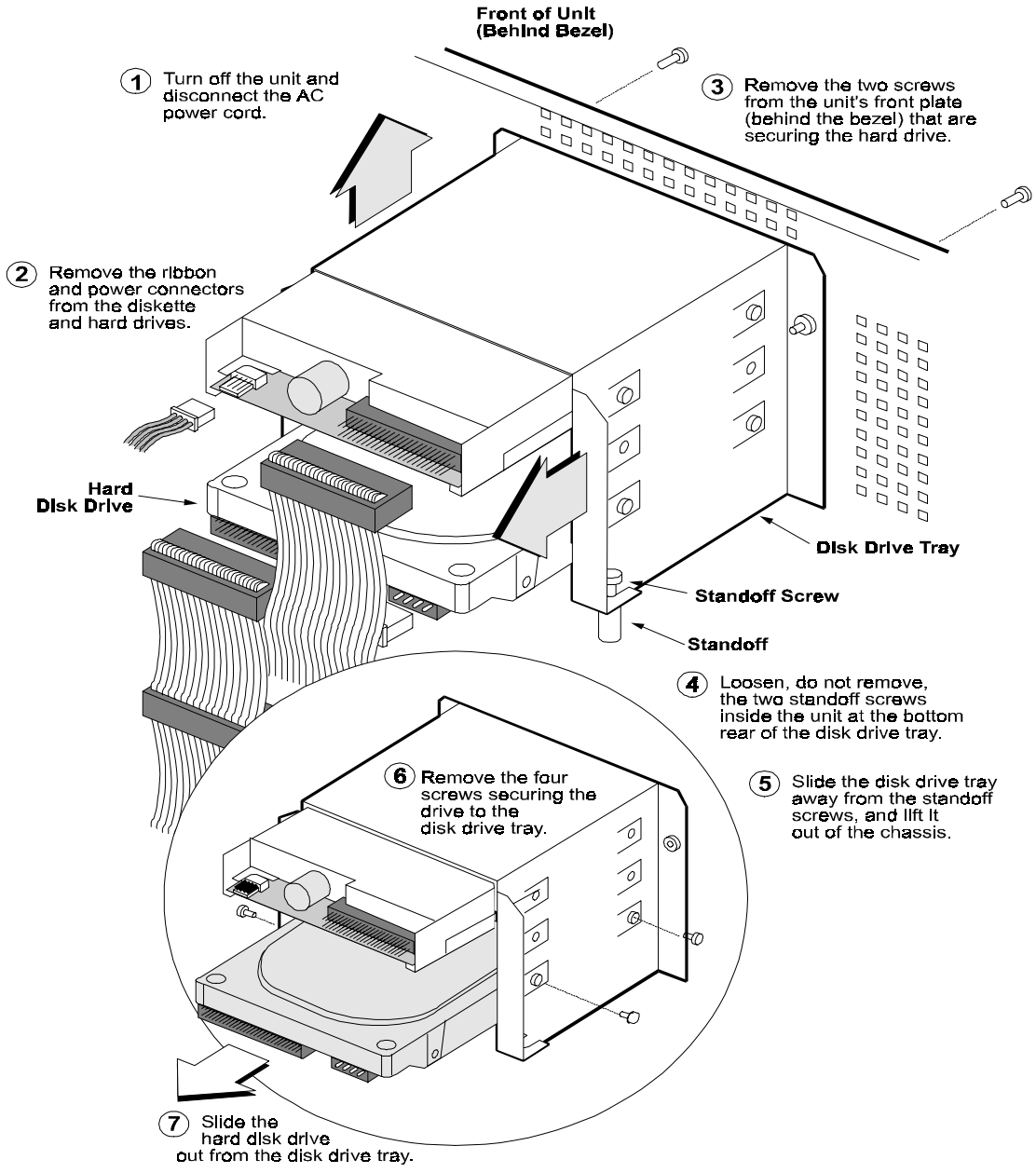



**Figure 22 – Removing the Hard Disk Drive**

## Replacing the Hard Disk Drive

The following steps describe Replacing the Hard Disk Drive.

1. Reattach the four screws securing the drive to the disk drive tray.
2. Put the disk drive tray back inside the chassis and slide it back over the two standoff screws.
3. Replace the two front screws, which draws the disk drive tray to the front of the chassis.
4. Tighten the two standoff screws.
5. Attach the DC power cable at the bottom to the hard drive.
6. Attach the hard drive ribbon cable. Make sure the hard drive cable is correctly positioned to the right.

   **NOTE**: When standing in front of the unit, the red line on the ribbon cable that signifies Pin 1 is on the left (i.e., facing the center of the unit).
7. Reattach the small ribbon cable to the diskette drive. Note that the connector has a key at the center.

   **CAUTION**: Make sure the diskette drive connector gets replaced over *both* rows; otherwise you would damage the drive.

# Appendix A
# Specifications

## Physical

Depth: 17 in. (43.18 cm)

Width: 16.75 in. (42.55 cm)

Height: 7.00 in. (17.78 cm)

Weight: 25.0 lbs. (11.34 kg)

Electrical: 110-120/220-240V, 6.0/3.0A 50-60Hz

## Operating Environment

Temperature: 32°F-122°F (0°C-50°C)

Relative Humidity: 10%-90% non-condensing

# Appendix B
# Special Notices

This appendix provides information on statements of conditions, the Bay Networks Software License Agreement, and RADIUS attribution.

## Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, Bay Networks, Inc. reserves the right to make changes to the products described in this document without notice.

Bay Networks, Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

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### Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

### EN 55 022 Statement

This is to certify that the Bay Networks  is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

**Warning:** This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

### EC Declaration of Conformity

This product conforms (or these products conform) to the provisions of Council Directive 89/336/EEC and 73/23/EEC. The Declaration of Conformity is available on the Bay Networks World Wide Web site at www.baynetworks.com.

### Voluntary Control Council for Interference (VCCI) Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

### Canadian Department of Communications Radio Interference Regulations

This digital apparatus does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

### Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

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# RADIUS (Remote Authentication Dial In User Service)

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